Environmental Profile

This LCA is calculated according to: ISO 14044, ISO 14040 and EN 15804

Ecochain v3.5.80

Product:	3000419 - U3 Pipe GY KOMO 90x3 L=5
Unit:	1 piece
Manufacturer:	Wavin - NL - Hardenberg - Verified
Address:	J.C. Kellerlaan 3 7772 SG Hardenberg Netherlands

Multi-layer U3 PVC pipes from Wavin made with recycled PVC in the middle layer. The tubes contain at least 40% recycled material.

LCA standard:	NMD Bepalingsmethode 1.1 (2022)
Standard database:	Worldwide - Ecoinvent v 3.6 Cut-Off
Externally verified:	Yes
Issue date:	08-06-2023
End of validity:	08-06-2028
Verifier:	Martijn van Hövell - SGS Search

This LCA was evaluated according to EN15804+A2. It was concluded that the LCA complies with this standard.

The LCA background information and project dossier have been registered in the online Ecochain application in the account Wavin - NL - Hardenberg - Verified (2020). (☑ = module declared, MND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
☑	☑	☑	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	☑	☑	☑	☑

Product stage

A1 Raw material supply A2 Transport A3 Manufacturing

Construction process stage

A4 Transport gate to site
A5 Assembly / Construction installation process

Use stage

B1 Use B2 Maintenance B3 Repair B4 Replacement B5 Refurbishment
B6 Operational energy use B7 Operational water use

End-of-Life stage

C1 De-construction demolition C2 Transport C3 Waste processing
C4 Disposal

Benefits and loads beyond the system boundaries

D Reuse- Recovery- Recycling- potential

Environmental impacts and parameters

ECI = Environmental Costs Indicator [euro]; **ADPE** = Abiotic depletion potential for non-fossil resources [kg Sb-eq]; **ADPF** = Abiotic depletion potential for fossil resources [kg Sb-eq]; **GWP** = Global warming potential [kg CO2-eq]; **ODP** = Depletion potential of the stratospheric ozone layer [kg CFC-11-eq]; **POCP** = Formation potential of tropospheric ozone photochemical oxidants [kg ethene-eq]; **AP** = Acidification potential of land and water [kg SO2-eq]; **EP** = Eutrophication potential [kg PO4 3−-eq]; **HTP** = Human toxicity potential [kg 1,4-DB-eq]; **FAETP** = Freshwater aquatic ecotoxicity potential [kg 1,4-DB-eq]; **MAETP** = Marine aquatic ecotoxicity potential [kg 1,4-DB-eq]; **TETP** = Terrestrial ecotoxicity potential [kg 1,4-DB-eq]; **GWP-total** = EF EN15804+A2 Climate Change [kg CO2 eq]; **GWP-f** = EF Climate change - Fossil [kg CO2 eq]; **GWP-b** = EF EN15804+A2 Climate Change - Biogenic [kg CO2 eq]; **GWP-luluc** = EF EN15804+A2 Climate Change - Land use and LU change [kg CO2 eq]; **ODP** = EF Ozone depletion [kg CFC11 eq]; **AP** = EF Acidification [mol H+ eq]; **EP-fw** = EF Eutrophication, freshwater [kg P eq]; **EP-m** = EF Eutrophication, marine [kg N eq]; **EP-T** = EF Eutrophication, terrestrial [mol N eq]; **POCP** = EF Photochemical ozone formation [kg NMVOC eq]; **ADP-mm** = EF Resource use, minerals and metals [kg Sb eq]; **ADP-f** = EF Resource use, fossils [MJ]; **WDP** = EF Water use [m3 depriv.]; **PM** = EF Particulate matter [disease inc.]; **IR** = EF Ionising radiation [kBq U-235 eq]; **ETP-fw** = EF Ecotoxicity, freshwater [CTUe]; **HTP-c** = EF Human toxicity, cancer [CTUh]; **HTP-nc** = EF Human toxicity, non-cancer [CTUh]; **SQP** = EF Land use [Pt]; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]; **PERM** = Use of renewable primary energy resources used as raw materials [MJ]; **PERT** = Total use of renewable primary energy resources [MJ]; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials [MJ]; **PENRM** = Use of non-renewable primary energy resources used as raw materials [MJ]; **PENRT** = Total use of non-renewable primary energy resources [MJ]; **PET** = Total energy [MJ]; **SM** = Use of secondary material [kg]; **RSF** = Use of renewable secondary fuels [MJ]; **NRSF** = Use of non-renewable secondary fuels [MJ]; **FW** = Use of net fresh water [m3]; **HWD** = Hazardous waste disposed [kg]; **NHWD** = Non-hazardous waste disposed [kg]; **RWD** = Radioactive waste disposed [kg]; **CRU** = Components for re-use [kg]; **MFR** = Materials for recycling [kg]; **MER** = Materials for energy recovery [kg]; **EE** = Exported energy [MJ]; **EET** = Exported energy thermic [MJ]; **EEE** = Exported energy electric [MJ]

Statement of Confidentiality

Results

Environmental impact SBK set 1	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
ECI	euro	0.49	0.03	0.04	0.56	0.02	0.34	0	-0.14	0.77
ADPE	kg Sb-eq	1.22E-4	5.48E-6	7.85E-6	1.35E-4	3.32E-6	2.76E-5	3.43E-8	-2.05E-5	1.45E-4
ADPF	kg Sb-eq	5.02E-2	1.58E-3	2.10E-3	5.39E-2	9.35E-4	9.72E-3	4.87E-5	-1.77E-2	4.68E-2
GWP	kg CO2-eq	4.34E+0	2.15E-1	3.74E-1	4.93E+0	1.27E-1	3.22E+0	3.07E-2	-1.63E+0	6.67E+0
ODP	kg CFC-11-eq	2.12E-6	3.81E-8	3.51E-8	2.20E-6	2.36E-8	3.89E-7	1.17E-9	-5.55E-7	2.06E-6
POCP	kg ethene-eq	2.81E-3	1.29E-4	1.65E-4	3.10E-3	7.64E-5	7.66E-4	8.17E-6	-6.43E-4	3.31E-3
AP	kg SO2-eq	1.69E-2	9.43E-4	1.47E-3	1.93E-2	5.48E-4	5.57E-3	2.59E-5	-3.73E-3	2.17E-2
EP	kg PO4 3−-eq	2.24E-3	1.85E-4	2.32E-4	2.66E-3	1.09E-4	8.44E-4	1.01E-5	-4.89E-4	3.14E-3
HTP	kg 1,4-DB-eq	1.64E+0	9.03E-2	1.41E-1	1.87E+0	5.45E-2	1.51E+0	2.66E-3	-3.52E-1	3.08E+0
FAETP	kg 1,4-DB-eq	1.86E-1	2.64E-3	5.75E-3	1.95E-1	1.60E-3	2.22E-2	8.14E-4	-7.31E-3	2.12E-1
MAETP	kg 1,4-DB-eq	1.27E+2	9.49E+0	2.34E+1	1.60E+2	5.70E+0	7.28E+1	9.88E-1	-2.16E+1	2.17E+2
TETP	kg 1,4-DB-eq	7.70E-2	3.19E-4	8.77E-3	8.61E-2	1.93E-4	5.36E-3	8.75E-6	-2.40E-3	8.93E-2
Environmental impact	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
GWP-total	kg CO2 eq	4.03E+0	2.17E-1	4.40E-1	4.68E+0	1.29E-1	3.82E+0	3.57E-2	-1.67E+0	7.00E+0
GWP-f	kg CO2 eq	4.43E+0	2.16E-1	3.45E-1	4.99E+0	1.28E-1	3.25E+0	3.57E-2	-1.66E+0	6.74E+0
GWP-b	kg CO2 eq	-4.23E-1	9.99E-5	7.46E-2	-3.49E-1	7.80E-5	5.76E-1	4.59E-5	-7.37E-3	2.20E-1
GWP-luluc	kg CO2 eq	2.08E-2	7.93E-5	2.10E-2	4.19E-2	4.54E-5	1.50E-3	9.58E-7	-7.57E-4	4.27E-2
ODP	kg CFC11 eq	2.10E-6	4.78E-8	4.17E-8	2.19E-6	2.96E-8	4.01E-7	1.45E-9	-5.58E-7	2.07E-6
AP	mol H+ eq	2.06E-2	1.25E-3	1.88E-3	2.38E-2	7.31E-4	6.99E-3	3.47E-5	-4.58E-3	2.69E-2
EP-fw	kg P eq	1.87E-4	2.18E-6	4.93E-6	1.94E-4	1.06E-6	4.98E-5	4.33E-8	-3.89E-5	2.06E-4
EP-m	kg N eq	4.04E-3	4.42E-4	5.54E-4	5.04E-3	2.62E-4	1.71E-3	2.14E-5	-8.94E-4	6.13E-3
EP-T	mol N eq	4.29E-2	4.87E-3	5.94E-3	5.37E-2	2.88E-3	1.88E-2	1.39E-4	-9.98E-3	6.56E-2
POCP	kg NMVOC eq	1.43E-2	1.39E-3	1.68E-3	1.73E-2	8.24E-4	5.65E-3	4.72E-5	-3.30E-3	2.06E-2
ADP-mm	kg Sb eq	1.22E-4	5.48E-6	7.85E-6	1.35E-4	3.32E-6	2.76E-5	3.43E-8	-2.05E-5	1.45E-4
ADP-f	MJ	1.06E+2	3.26E+0	3.99E+0	1.13E+2	1.97E+0	1.93E+1	1.05E-1	-3.58E+1	9.88E+1
WDP	m3 depriv.	6.40E+0	1.17E-2	2.70E+0	9.11E+0	6.05E-3	7.43E-1	5.61E-4	-1.48E+0	8.38E+0
PM	disease inc.	2.11E-7	1.94E-8	2.92E-8	2.59E-7	1.16E-8	8.81E-8	7.20E-10	-3.06E-8	3.29E-7
IR	kBq U-235 eq	2.20E-1	1.37E-2	7.21E-3	2.41E-1	8.61E-3	6.71E-2	4.83E-4	-5.08E-2	2.66E-1
ETP-fw	CTUe	7.28E+1	2.91E+0	6.66E+0	8.24E+1	1.60E+0	1.42E+2	1.56E+0	-1.75E+1	2.10E+2
HTP-c	CTUh	3.02E-9	9.44E-11	2.27E-10	3.35E-9	5.70E-11	2.10E-9	2.70E-12	-6.02E-10	4.90E-9
HTP-nc	CTUh	8.83E-8	3.18E-9	6.95E-9	9.84E-8	1.91E-9	5.03E-8	3.00E-10	-1.96E-8	1.31E-7
SQP	Pt	6.65E+1	2.83E+0	2.99E-1	6.96E+1	1.69E+0	1.21E+1	2.67E-1	-1.36E+1	7.01E+1

Resource use	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
PERE	MJ	1.27E+1	4.09E-2	1.20E+1	2.48E+1	2.83E-2	1.37E+0	3.79E-3	-3.24E+0	2.29E+1
PERM	MJ	0	0	0	0	0	0	0	0	0
PERT	MJ	1.27E+1	4.09E-2	1.20E+1	2.48E+1	2.83E-2	1.37E+0	3.79E-3	-3.24E+0	2.29E+1
PENRE	MJ	1.14E+2	3.46E+0	4.33E+0	1.21E+2	2.09E+0	2.05E+1	1.12E-1	-3.89E+1	1.05E+2
PENRM	MJ	0	0	0	0	0	0	0	0	0
PENRT	MJ	1.14E+2	3.46E+0	4.33E+0	1.21E+2	2.09E+0	2.05E+1	1.12E-1	-3.89E+1	1.05E+2
PET	MJ	1.26E+2	3.51E+0	1.64E+1	1.46E+2	2.12E+0	2.19E+1	1.15E-1	-4.21E+1	1.28E+2
SM	kg	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	7.29E-2	3.97E-4	6.36E-2	1.37E-1	2.23E-4	2.03E-2	1.29E-4	-1.62E-2	1.41E-1
Output flows and waste categories	Unit	A1	A2	A3	A1-A3	C2	C3	C4	D	Total
HWD	kg	8.81E-5	8.27E-6	5.59E-6	1.02E-4	5.04E-6	3.10E-5	1.26E-7	-3.30E-5	1.05E-4
NHWD	kg	4.32E-1	2.07E-1	8.07E-3	6.47E-1	1.22E-1	7.19E-1	4.88E-1	-8.48E-2	1.89E+0
RWD	kg	2.00E-4	2.14E-5	1.00E-5	2.32E-4	1.34E-5	7.23E-5	6.88E-7	-4.65E-5	2.72E-4
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0